UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,199	05/04/2006	Hidetoshi Nishihara	2006_0663A	8489

52349 7590 03/06/2009

WENDEROTH, LIND & PONACK L.L.P.
1030 15th Street, N.W.
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
BOBISH, CHRISTOPHER S	

ART UNIT	PAPER NUMBER
3746	

MAIL DATE	DELIVERY MODE
03/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,199	NISHIHARA, HIDETOSHI	
	Examiner	Art Unit	
	CHRISTOPHER BOBISH	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendment filed on 12/18/2008 under 37 CFR 1.131 has been considered but is ineffective to overcome the Solomon reference.

Drawings

The corrected drawings were received on 12/18/2008. Figure 7 has been amended to include a “prior Art” label and therefore the objection to the drawings is withdrawn.

Claim Rejections - 35 USC § 112

With respect to the applicant’s arguments towards the previous 112 rejection pertaining to an operating frequency of the compressor motor, applicant's arguments are persuasive. Specifically, the examiner acknowledges that the specification identifies a unit of measurement (Hz) corresponding to the operating frequency, and that the teaching of an inverter circuit enables a voltage or frequency from a power source to be controlled to a higher or lower value for use in a motor. (Page 11 paragraph 26 of the original specification). Therefore the rejection is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 9, 10, 11, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 3,182,901 to Solomon (Solomon) in view of US Patent 5,816,134 to Takenaka et al (Takenaka).

In Reference to Claim 9

Solomon teaches a compressor comprising: a hermetic container storing oil therein (shell (11)); an electric motor (13) contained in said hermetic container, said electric motor including a stator (18) and a rotor (23); a compressor unit (12)linked to be driven by said electric motor, said compressor unit including a shaft that extends in a vertical direction (shaft (22)) and is to be rotated by said electric motor; and an oil pump which is formed at a lower end of said shaft and immersed in the oil (see figures 1 and 2),wherein said oil pump includes a helical groove (spiral groove (38)) provided in an outer periphery of said shaft, a cup-shaped sleeve (bearing (21) is shaped like a cup) rotatably mounted on the lower end of said shaft so as to cover said helical groove with a predetermined clearance defined between said shaft and said sleeve, and a rotation-suppressing element for suppressing rotation of said sleeve (frame (14) prevents the bearing from rotating with the shaft),

Solomon does not teach a specific clearance between the shaft and a sleeve, (wherein said predetermined clearance is 100 μm to 500 μm).

However, it would have been obvious to one having ordinary skill in the art of compressors at the time of the invention to choose a clearance between the shaft and sleeve of Solomon in order to control the flow of oil there through, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Furthermore, Takenaka teaches a compressor **(see FIG. 1)** having a shaft **(11)** provided in a sleeve **(cylinder 2a),** said shaft including helical grooves **(FIG. 12 (17))** for transporting lubricating oil to working parts of the compressor **(C. 7 Lines 13-28)**; In **C. 1 Lines 45-54**, Takenaka teaches that the clearance between the shaft **(11)** and a sleeve **(2a)** has a direct effect on the flow of lubricant therein, therefore it would have been an obvious modification to change the clearance between the shaft and sleeve taught by Solomon in order to control the oil flow in the compressor.

Solomon and Takenaka disclose and teach of the compressor in claim 9.

Solomon further teaches:

In Reference to Claim 10

wherein said rotation-suppressing element comprises a bracket secured with said stator to fix said sleeve to said stator (the frame (14) serves as a bracket to connect to the sleeve to the stator).

In Reference to Claim 11

wherein said rotation-suppressing element comprises a wing formed on an outer periphery of said sleeve to generate a viscous resistance with respect to the oil. The oil pump of Solomon also has a fans means (50), see figures 5 and 6, with blades (56) that are arranged around the outer periphery of the bearing sleeve (21). These blades act as wings that act as stirrers for the oil and generate a resistance force with the oil as they stir it.

In Reference to Claim 13

wherein said compressor unit further comprises a shaft support for rotatably supporting said shaft (upper bearing (19)), said shaft having a vertical hole defined therein (passage (31)) so as to extend in a vertical direction thereof, said vertical hole communicating an upper end of said helical groove with a clearance between said shaft and said shaft support (see figures 1 and 2, where the passage allows oil to be pumped to lubricate the upper bearing).

In Reference to Claim 15

wherein said compressor trait is supported elastically in said hermetic container (The compressor is supported by springs (27) and lugs (28 and 29) in an elastic manner inside the shell).

Claims 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over PCT Publication WO 93/22557 to Krueger et al. (Krueger et al.) in view of US Patent 5,816,134 to Takenaka et al (Takenaka).

In Reference to Claim 9

Krueger et al. teach a compressor comprising: a hermetic container storing oil therein (hermetic shell (1)); an electric motor contained in said hermetic container, said electric motor including a stator and a rotor (motor (6), see figure 3); a compressor unit linked to be driven by said electric motor, said compressor unit including a shaft that extends in a vertical direction and is to be rotated by said electric motor (eccentric shaft (5) shown in figure 1 is used to drive a compressor); and an oil pump which is formed at a lower end of said shaft and immersed in the oil (see figure 4a), wherein said oil pump includes a helical groove (22) provided in an outer periphery of said shaft, a cup-shaped sleeve (30) rotatably mounted on the lower end of said shaft so as to cover said helical groove with a predetermined clearance defined between said shaft and said sleeve, and a rotation suppressing element for suppressing rotation of said sleeve (arm and tooth (50)).

Krueger does not teach a specific clearance between the shaft and a sleeve, (wherein said predetermined clearance is 100 μm to 500 μm).

However, it would have been obvious to one having ordinary skill in the art of compressors at the time of the invention to choose a clearance between the shaft and sleeve of Krueger in order to control the flow of oil there through, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Furthermore, Takenaka teaches a compressor **(see FIG. 1)** having a shaft **(11)** provided in a sleeve **(cylinder 2a),** said shaft including helical grooves **(FIG. 12 (17))** for transporting lubricating oil to working parts of the compressor **(C. 7 Lines 13-28)**; In **C. 1 Lines 45-54**, Takenaka teaches that the clearance between the shaft **(11)** and a sleeve **(2a)** has a direct effect on the flow of lubricant therein, therefore it would have been an obvious modification to change the clearance between the shaft and sleeve taught by Krueger in order to control the oil flow in the compressor.

Krueger and Takenaka disclose and teach of the compressor in claim 9.

Krueger further teaches:

In Reference to Claim 16

wherein said electric motor is driven at operation frequencies including a frequency lower than a power source frequency. Krueger et al. teach that the motor of the compressor needs to be operated at a speed between 15 and 100 Hz, which includes frequencies less than the standard available utility power, which operates at 50 Hz (see pages 3-5, lines 16-8).

Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solomon in view of US Patent 5,816,134 to Takenaka et al (Takenaka) as applied to claim 9 above, and in further view of U.S. Patent 6,484,847 to Paczuski (Paczuski).

In Reference to Claim 12

Solomon and Takenaka disclose and teach a compressor in accordance with claim 9 (see the rejection of claim 9 above), but do not teach the use of a magnetic element in the compressor.

Paczuski teaches another compressor apparatus with an oil sump pump supported at the base of the operating shaft, where the sleeve (109) of the oil pump includes a magnetic disk (84) which prevents ferrous particles from entering the oil pump. It would have been obvious to one of ordinary skill in the art at the time of invention to include a magnetic trap in the sleeve of Solomon and modified by Takenaka as taught by Paczuski in order to prevent magnetic particles from entering the oil pump. When the apparatus of Solomon as modified by Takenaka is so modified, the rotation-suppressing sleeve would have a permanent magnet secured to it, and ferrous particles supported in the hermetic container would be attracted to the magnetic force of said permanent magnet.

In Reference to Claim 14

Solomon and Takenaka disclose and teach a compressor in accordance with claim 9 (see the rejection of claim 9 above), but does not teach that the sleeve is formed of a synthetic resin.

Paczuski teaches another compressor apparatus with an oil sump pump supported at the base of the operating shaft, where the sleeve (109) of the oil pump is made from an abrasion resistant moldable plastic (see column 5 lines 34-38). It would have been obvious to one of ordinary skill in the art at the time of invention to form the sleeve taught by Solomon and modified by Takenaka out of plastic as taught by Paczuski since it would have been obvious to vary the materials that the device is made from, and since plastic is abrasion and corrosion resistant.

Response to Arguments

Applicant's arguments with respect to claims 9-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER BOBISH whose telephone number is (571)270-5289. The examiner can normally be reached on Monday through Thursday, 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571)272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Bobish/
Examiner, Art Unit 3746

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

/C. B./

Examiner, Art Unit 3746